

CERTIFICATION

I, Shigeru Yanagihara, of Yanagihara & Associates, 310, Toranomon Garden
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the following is a true and correct translation, to the best of my knowledge and
belief, of relevant portions of JP 11-086808A.

Place Tokyo

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Applicant: Sumitomo Electric Ind. Ltd.

【Title of the invention】 Sealing bag for non-aqueous electrolyte battery

【Patent Claims】

【Claim 1】 A sealing bag for non-aqueous electrolyte battery, which battery has a structure in which the positive and negative electrodes and the electrolyte etc. are enclosed in the sealing bag and the lead wires from the positive and negative electrodes are guided out to the exterior, characterized in that the bag is made of a laminated sheet composed of a metal layer and one or more plastics layers, wherein the plastics layer stuck on the metal layer surface on the electrolyte side is constituted of a composition composed mainly of an acid-modified polyethylene, an acid-modified polypropylene or an ionomer and wherein the metal layer and the plastics layer are directly stuck together by heat lamination.

【0003】

【Subject to be solved by the invention】

While the sealing performance of a sealing bag can considerably be increased by incorporation of a metal laminate layer, nevertheless intrusion of moisture from the sealed portion cannot be avoided completely. It is aimed by the present invention to provide a sealing bag for non-aqueous electrolyte battery, in which intrusion of moisture is prevented as scarce as possible and occurrence of corrosion of electrodes and of interlayer separation between the metal layer and the plastics layer can be avoided even if such a moisture penetration may occur and hydrofluoric acid is

formed thereby.

[0004]

[Means for solving the subject]

The inventors had made their sound endeavors to attain the above-mentioned object and reached the discovery that the object can be attained when an acid-modified polyethylene, an acid-modified polypropylene or an ionomer is employed for the plastic resin layer and this plastic resin layer is bonded directly with metal layer by heat lamination to form a laminated sheet and the sealing bag for battery is prepared from this laminated sheet in which the plastic resin layer is placed on the side of the electrolyte.

[0005]

In the following, the present invention will be described in more detail with reference to the appended drawings. For an electric battery of the type in which the electrodes, electrolyte and partition membrane etc. are enclosed in a sealing bag, the sealing bag is prepared in such a manner, as shown in Fig. 3, that the sealing bag is sealed by fusing together the innermost heat-sealable layer 10 of the bag at the front cut end at which it is brought into direct contact together. In such a sealing bag, the positive and negative electrodes, partition membrane and electrolyte are enclosed, as shown schematically in Fig. 2. The lead wire is guided out from the sealing bag in such a manner that the sealing bag and the lead wires are integrally settled by fusing the heat-sealable layer 10 of the sealing bag together with the insulator 2 of the lead wire, as shown schematically in Fig. 4. Within the sealing bag, the positive electrode and the negative electrode are held each in contact with a lead wire. The positive and negative electrodes are settled in contact with each corresponding lead wire before they are enclosed in the sealing bag.

[0010]

For the material of the sealing bag, a laminated sheet in which a metal layer, such as aluminum foil etc., or a metal vapor-deposited layer is

sandwiched between two plastic resin layers may preferably be used, wherein it is necessary that the inside plastic resin layer is insoluble in the electrolyte.

[0011]

The inventors had reached an idea of resolving the problem of separation of the metal layer from the plastic resin layer by hydrofluoric acid formed due to reaction of the non-aqueous electrolyte with moisture penetrated during long term practical service. The idea consists in that an acid-modified polyethylene, an acid-modified polypropylene or an ionomer is used for the plastic resin layer, so as to allow direct bonding of the plastic resin layer onto the metal layer by heat lamination without using any adhesive.

[Brief explanation of the drawings]

[Fig. 1]

Fig. 1 shows a non-aqueous electrolyte battery in which the sealing bag according to the present invention and corresponding lead wires are employed.

[Fig. 2]

Fig. 2 shows the inside of the sealing bag in a schematic illustration.

[Fig. 3]

Fig. 3 illustrates the internal structure of the sealing bag battery in a sectional view.

[Fig. 4]

Fig. 4 shows the heat-sealed portion of the sealing bag battery in an enlarged view.

[Explanation of symbols used]

- 1, 1' : Conductor of lead wire
- 2, 2' : Insulator of lead wire
- 3 : Sealing bag
- 4 : Sealed portion of sealing bag battery (exemplary)

- 5, 5' : Electrodes
- 6 : Partition membrane
- 7 : Current collector for positive electrode
- 7' : Current collector for negative electrode
- 8 : Active material for positive electrode
- 9 : Active material for negative electrode
- 10 : Heat-sealable layer
- 11 : PET layer